

ently does not belong to that genus at all, since it is without the very striking internal transfusion sheath of the lower cretaceous genus, has a double instead of a single foliar bundle (a point of great importance, as will be recognized by those versed in the anatomy of *Pinus* in its living species), and no centripetal xylem. The authors make light of the absence of the last feature, but in this they are apparently not well advised.—E. C. JEFFREY.

Conduction of stimulus.—ROTHERT has shown that the conduction of stimulus of unilateral illumination from the tip of the *Avena* seedling to the darkened basal portion occurs when the vascular strands are cut; and that a horizontal incision on one side, whether toward, away, or on the flank in reference to the one-sided illumination, still permits conduction. FITTING showed that when the incision was away from the light and a mica plate inserted, no conduction occurred. The insertion of a slice of rattan in the same position did not prevent conduction; the latter of course allows the continuity of water and solution. When the mica plate was inserted in an incision on the lighted side, conduction was not hindered. JENSEN¹⁴ finds that with the incision away from the light, no conduction occurs in dry air or in water. He assumes that under favorable conditions the stimulus can be conducted across the wound while under unfavorable conditions it cannot. In saturated air the stimulus was also conducted from the tip to the darkened base, even after the tip (1 cm. long) had been entirely cut off and set back and fastened by gelatin and cocoa butter.—WILLIAM CROCKER.

Embryo sac of Pandanus.—In 1909 CAMPBELL published an account of the embryo sac of *Pandanus*, which was reviewed in this journal (47:485, 1909). In this Javanese material the fertilization stage was not secured, so that it was not certain that the interesting situation described is the one at fertilization. Now there has come to hand additional material (*P. coronatus*) which has supplied the missing stage.¹⁵ An ordinary egg apparatus is organized, but there occurs "a large discoidal mass of cells" at the antipodal end of the sac, and fusions of "polar" nuclei (up to six) were observed. The number of cells in the sac at the fertilization stage would thus seem to be greater than that recorded for any other angiosperm. The amount of antipodal tissue suggests the situation in *Sparganium*, the difference being that in the latter genus this tissue develops after fertilization.—J. M. C.

¹⁴ JENSEN, P. BOYSEN, Ueber die Leitung des phototropischen Reizes in Avenakumpflanzen. Ber. Bot. Gesell. 28:118-120. 1910.

¹⁵ CAMPBELL, DOUGLAS H., The embryo sac of *Pandanus coronatus*. Bull. Torr. Bot. Club 24:293-295. figs. 6. 1910.